

ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM
SITE SAFETY PLAN

US EPA RECORDS CENTER REGION 5



532211

A. GENERAL INFORMATION

SITE: Buens Cold Forge TDD NO.: FDS-8709-057

LOCATION: 9312 Arrow Rd NW MINERVA, OH 44657 WSTS/ACCOUNT NO: F040624

PLAN PREPARED BY: Thomas A. Kouris DATE: 11-6-87

APPROVED BY: _____ DATE: _____

OBJECTIVE(S): (including description of work to be performed): Interview, Visual inspection and collection of 5 soil samples plus background samples. Samples taken below surface will be collected with a power auger.

PROPOSED DATE OF INVESTIGATION: December 3, 1987

BACKGROUND REVIEW: Complete: _____ Preliminary: X

DOCUMENTATION/SUMMARY: Overall Hazard: Serious: _____ Moderate: _____
Low: X Unknown: _____

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid X Solid _____ Sludge X Gas _____

CHARACTERISTIC(S): Corrosive X Ignitable _____ Radioactive _____ Volatile _____

Toxic X Reactive _____ Unknown X Other (Name) _____

FACILITY DESCRIPTION: Cold forging operation manufacturing shafts, pinions, and spindles.

Principal Disposal Method (type and location): Waste Oil and waste acids were stored in on site pits (most likely P&C)

Unusual Features (dike integrity, power lines, terrain, etc.): Outfall and discharge to Still Fork NPDES permitted

Status: (active, inactive, unknown) Active facility but our sampling will be at the inactive pits.

History: (Worker or non-worker injury; complaints from public; previous agency action): Waste oils were stored previously in pits outside the facility. Allegations exist that waste acids & oil were codisposed in those pits. Since the pits closure, saturated soil have been landfilled, but no site soil samples have been taken.

C. HAZARD EVALUATION

(Use Hazard Evaluation of Chemicals sheets for specific or representative chemicals present.):

Heavy Metals (Pb, Cr)
Spent Acid (pickling liquor)
Waste Oil (Cutting, hydraulic)

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch Attached yes Site Secured? yes
Perimeter Identified? No Zone(s) of Contamination Identified? No
Area of concern is the old waste pits. we will assume entire area is contaminated.

PERSONAL PROTECTION

Level of Protection: A B C D X
Modifications: Upgrade to Level C if HNu Registers 1ppm over background. If subsurface samples are taken, constant monitoring will be done.
Surveillance Equipment and Materials:
HNu w/10.2eu probe 0-1ppm over background-Level D
1-5ppm over background-Level C
≥5 ppm over background-abandon site, contact RSC
RAO Mini - IF Alarm Sounds, abandon site and call RSC.
O₂, Explosimeter, Dwyer Pump - not needed based upon known site history and the nature of the contaminant.

DECONTAMINATION PROCEDURES: EQPT - wash with alconox, rinse with distilled H₂O
sample bottles - wipe with alconox, rinse with distilled
disposables - wash with alconox, rinse with distilled, double bag and throw
away off site wash & rinse will be left on site - prior permission obtained

Special Equipment, Facilities, or Procedures:

If subsurface samples are taken, a power auger will be used. Before site inspections, any buried pipelines, sewer lines will be located so power augering will not strike permanent structures.

SITE ENTRY PROCEDURES: OBTAIN PERMISSION FROM SITE REPRESENTATIVES.
OBSERVE BUOY SYSTEM. STAY UPWIND OF CONTAMINATED AREAS.

Team Member	Responsibility
THOMAS A KOURIS	TEAM LEADER
STEVEN ANDERSON	SAMPLE MGMT
JOSEPH D. CORNS	Team Member - power auger
TIMOTHY MAYERS	Site Safety Officer

WORK LIMITATIONS (Time of day, etc.): Day light Hours Only, Personnel to monitor each other for heat/cold stress.

INVESTIGATION-DERIVED MATERIAL DISPOSAL: investigation derived materials will be washed with alconox, rinsed with distilled water, double bagged and thrown away off site.

wash & rinse to be left on site - prior permission to be obtained.

E. EMERGENCY INFORMATION*

LOCAL RESOURCES

Ambulance MINERVA AMBULANCE SERVICE 216-868-7733
Hospital Emergency Room ALLIANCE COMM. HOSPITAL 216-821-1000
Poison Control Center AKRON MEDICAL CENTER 800-362-9922
Police MINERVA 216-868-4177
Fire Department MINERVA 216-868-4177
Airport N/A
Explosives Unit MINERVA FIRE DEPT. 216-868-4177
EPA Contact DR. DON JOSIE 317-886-0393

SITE RESOURCES

Water Supply TO BE DETERMINED
Telephone " " "
Radio N/A
Other N/A

EMERGENCY CONTACTS

1. Mr. Raymond Harbison (University of Arkansas) (501) 661-5766 or 661-5767
MED-TOX (501) 370-8263 (24 hours)
2. Regional Safety Coordinator - Paul Moss **(Not responsive)**
3. Regional Project Manager- Rene Van Someren (312) 763-7335
4. FIT Office (312) 663-9415
5. E & E 24 Hour Call Line (716) 631-9530 (24 Hours; Call Forwarding)
6. Regional Health Maintenance Program Contact PMI - (312) 832-8820
8:00 a.m. - 5:00 p.m.
7. Paul Jonmaire..... (716) 631-9530 (Response Center
Corporate Safety Director (716) 632-4491 (office)
8. Ecology and Environment, Inc. NPMO (703) 522-6065

F. EMERGENCY ROUTES

(Give road or other directions; attach map)

Hospital: TAKE ARROW ROAD NORTHWEST TO RT 183. GO NORTH AND FOLLOW RT 183 SIGNS INTO ALLIANCE. WHEN YOU GET TO COLLEGE STREET GO EAST 2 BLOCKS TO HOSPITAL

Guidelines For the Hazard Evaluation of Chemicals

A hazard evaluation for each substance known or suspected to occur on site must be included in every site safety plan. This will inform on-site and response personnel of the necessary health and safety information needed for routine and emergency situations when working with this substance. As many current resources as possible should be consulted to ensure that all the information is the most accurate available. The following guidelines should enable you to both interpret the information on the form as well as prepare a form when necessary.

I. Classification:

- A. Chemical Name - most common chemical or trade name.
- B. DOT Classification (Designation) - The United States Department of Transportation has published listings of hazard classifications for chemical substances.
- C. CAS Number - Chemical Abstract Service Registry Number can be used to cross reference sources and also search chemical databases.
- D. Job Number - The correct Job number (or TDD number) and date must appear on every form used for the safety plan.

II. References Consulted:

As many current references as possible must be consulted to accurately complete this form. A list of commonly used references is included on the form and all that are consulted should be circled. A space is provided to encourage the use of other resources.

- A. MSDS (Material Safety Data Sheet) - Supplied by manufacturers and contains safety and handling information as well as a physical description of the commercial product.

III. Chemical Properties:

This section includes the physical and chemical properties of the chemical. The following properties will not be discussed in detail since they are common terms used to describe chemicals: Synonyms, Chemical Formula, Molecular Weight (MW), Boiling and Freezing Point, Vapor Pressure, and Specific Gravity Density.

- A. Ionization Potential - This is defined as the work required to remove a given electron from its atomic orbit and place it at rest at an infinite distance, and is expressed as electron volts (ev). This value should be used to properly select the HNU lamp for site entry equipment to adequately detect the chemical(s) of concern. The HNU will detect ionization potentials of chemicals less than or equal to the detection limit of the specified lamp type.
- B. Flash Point - The minimum temperature of a liquid at which it gives off vapor sufficient to form an ignitable mixture with the air at or near the surface of the liquid. This value was obtained by the closed cup test unless otherwise indicated. This value can be used to determine the flammability of the chemical.
- C. Flammable Limits - For gases and vapors which form flammable mixtures with air or oxygen, there is a minimum (LEL-Lower Explosion Limit) and a maximum (UEL-Upper Explosion Limit) concentration of vapor in air below and above which the substance will not burn when exposed to an ignition source. High temperature tends to decrease the LEL and increase the UEL, thus increasing the flammable range.
- D. Solubility - Water: The degree to which a substance is soluble in water and expressed in grams/100ml H₂O. Insoluble <10; Slightly 10-25; Soluble >25.
Solubility - Other: Solubility in other substances should be listed (e.g. alcohol, ether).

- E. Odor/Odor Threshold - This is the lowest concentration of a substance in air that humans can detect through smell and is expressed in ppm. A description of the odor should also be included. This value cannot be relied on to prevent over-exposure since human odor sensitivity is variable. Some chemicals cannot be detected at toxic concentrations, and/or the odor may be masked by other odors.
- F. Incompatibilities and Reactivity - This includes conditions at which other substances present may cause a deleterious change in the chemical, resulting in a hazardous situation.

IV. Toxicological Properties:

- A. Exposure Limits - The various established exposure limits for the chemical are included in this section and should be expressed as ppm or mg/m³. Although all limits are given, you should always consider the most conservative limit when determining safe working levels.
1. TLV-TWA(ACGIH): This is the Threshold Limit Value - Time Weighted Average recommended by the American Conference of Governmental Industrial Hygienists. This concentration is for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed without adverse effects. It assumes a healthy worker.
 2. STEL(ACGIH): The Short Term Exposure Limit is a recommended 15-minute TWA which should not be exceeded at any time during a workday even if the 8-hour TWA is within the TLV. This is the concentration to which workers can be exposed continuously for short periods of time without adverse effects.
 3. PEL(OSHA): The Permissible Exposure Limit is an enforceable standard promulgated by OSHA and is the 8-hour TWA or ceiling concentration above which workers may not be exposed.
 4. Ceiling Limit(ACGIH): This recommended concentration should not be exceeded at any time during the workday.
 5. IDLH(Immediately Dangerous to Life or Health): This value represents a maximum concentration from which one could escape within 30 minutes without suffering irreversible health effects. At hazardous waste sites, IDLH concentrations should be assumed to represent concentrations above which only workers wearing respirators that provide the maximum protection are permitted (i.e. SCBA).
- B. Toxicity Data - Data obtained from human and rat or mouse exposures are included in this section, although space is provided to include other pertinent species. Information regarding inhalation, skin, and oral routes of exposure must be included, if available, as well as the duration of study (e.g. 1 year, 90 days). The dose is usually expressed as milligrams per kilogram of body weight (mg/kg) or ppm. The toxicity of the exposure is expressed in the following terms:
1. LD₅₀ (Lethal Dose Fifty) - A calculated dose of a substance which is expected to cause the death of 50% of a defined experimental animal population for a specified study period, and is determined from any route of exposure except for inhalation (see LC₅₀).
 2. LC₅₀ (Lethal Concentration Fifty) - Similar to an LD₅₀ but describes exposure by inhalation to a calculated concentration of a substance in air.
 3. LD₁₀ (Lethal Dose Low) - The lowest dose (besides LD₅₀) of a substance administered by any route other than inhalation (see LC₁₀), for any period of time and reported to cause death in humans and/or animals.
 4. LC₁₀ (Lethal Concentration Low) - The lowest concentration in air (besides LC₅₀) which has been reported to cause death in humans and/or animals.

5. TD₁₀ (Toxic Dose Low) - The lowest dose of a substance by any route of exposure, except inhalation (see LC₁₀), for any specified period of time in which a toxic response is produced. This also includes tumorigenic, mutagenic, and reproductive effects. A code for the type of effect will usually follow the dose (e.g. IRR - irritation; CNS - central nervous system; KDN - kidney).
6. TC₁₀ (Toxic Concentration Low) - Similar to TD₁₀ except that this term describes the concentration of a substance in air that produces a toxic effect upon inhalation.
7. Interpretation of data - These are general terms to describe the relative toxicity of a substance, but since all chemicals can be toxic, the duration of an exposure as well as the amount must be defined to compare toxicities.

<u>Experimental Dose</u>	<u>Degree of Toxicity</u>
< 1.0 mg/kg	dangerously toxic
1 - 50 mg/kg	seriously toxic
50 -500 mg/kg	highly toxic
0.5 - 5 gm/kg	moderately toxic
5 - 15 gm/kg	slightly toxic
> 15 gm/kg	extremely low toxicity

8. Aquatic Toxicity - Usually expressed as T_m96:ppm
 T_m (Media Tolerance Limit): approximately 50% of fish will show abnormal behavior under the specified conditions.
 96: time of exposure expressed in hours
 ppm: parts/mg/liter of chemical tested
9. Carcinogen, Mutagen, Reproductive Toxin - This section describes the potential of a substance to be a carcinogen, mutagen or reproductive toxin.
 - a. Carcinogen: any substance known or suspected to cause cancer in humans and/or animals.
 - b. Mutagen: any substance that can change the chemical structure of DNA, which may result in adverse health effects. Rarely, a beneficial effect can occur. Status of carcinogenicity and mutagenicity should be expressed as positive, suspect, indefinite, experimental, or negative and should also include the type of species.
 - c. Reproductive Toxin: substances which may have an adverse effect on the reproductive system or on the offspring of affected parents. Designations on the hazard evaluation form include:
 - teratogen - substances that cause defects in the developing fetus resulting in abnormalities of the child at birth.
 - fetotoxic - substances that cause death to the developing fetus.
 - mutagen - substances that cause long term effects on the male or female reproductive system, possibly resulting in sterility.
10. Routes of Exposure - The major routes of exposure most encountered in the field are listed and all that apply should be circled. However, some substances may have unique exposure properties and must also be included. Dermal contact and eye(ocular) should be interpreted as the direct effect of exposure to vapor, liquid, or gas (e.g. irritation, burns, dermatitis). Dermal absorption refers to a chemical that is absorbed through the skin resulting in systemic effects, or effects not associated with the area of direct contact of the chemical.

V. Handling Recommendations:

Recommendations for both proper respiratory equipment and protective clothing are included in this section. Recommended respiratory equipment can be utilized less than or equal to the specified concentration to ensure the greatest degree of protection. Types of protective clothing should be evaluated as excellent, good, or poor for working with this particular substance. These recommendations should be used to assist in the proper selection of protective equipment that is required for site safety plans.

Special equipment or handling procedures should also be included.

VI. Disposal, Fire, and Leaks/Spills:

Proper procedures for waste disposal, fire extinguishing media, and leaks/spill should be entered as codes on the form. These codes and descriptions are adapted from the Sigma-Aldrich Library of Chemical Safety Data and a copy of these codes must be included with every safety plan (attached). Decomposition products resulting from exposure to the chemical to heat or fire must also be included.

VII. First Aid:

Simple first aid procedures for immediate response to ingestion, inhalation, eye, or skin exposures to the toxic substance must be included. When a chemical exposure has occurred, professional medical assistance must be obtained immediately and the Med-Tox Plan must be activated.

VIII. Symptoms:

This section includes all symptoms and health effects resulting from acute and/or chronic exposure to the substance. Both immediate and long term effects, as well as any possible reproductive effects, must be given.

- A. Acute (immediate) effects - These toxic effects are usually noticed within a short period of time after exposure and are most often associated with a single exposure or multiple exposures over a short duration (acute). Symptoms such as nausea, headache, diarrhea, or tearing of the eyes are some examples of acute effects.
- B. Chronic (long term) effects - These toxic effects are usually delayed and are most often associated with repeated or prolonged exposures (chronic). Acute effects may also be associated with chronic exposure. Examples of chronic effects include cancer, respiratory disease, liver and lung damage.
- C. Reproductive effects - These toxic effects include teratogenicity, carcinogenicity, and mutagenicity. Evidence of the effects on the male or female reproductive system should also be included.

THE SIGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA

Explanation of Codes

PROCEDURES FOR SPILLS OR LEAKS

- 1 Absorb on sand or vermiculite and place in closed container for disposal.
- 2 Cover with dry lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors.
- 3 Shut off all sources of ignition.
- 4 Evacuate area.
- 5 Cover with an activated carbon adsorbent, take up and place in closed container. Transport outdoors.
- 6 Ventilate area and wash spill site after material pickup is complete.
- 7 Sweep up, place in a bag and hold for waste disposal.
- 8 Avoid raising dust.
- 9 Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.
- 10 Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.
- 11 Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.
- 12 Carefully sweep up and remove.
- 13 Flush spill area with copious amounts of water.
- 14 Mix with solid sodium bicarbonate.
- 15 Place in appropriate container.
- 16 Wear protective equipment.
- 17 Wash spill site with soap solution.
- 18 Please contact the Technical Services Department. Be sure to mention the name and catalog number of the material.

FIRE-EXTINGUISHING MEDIA

- 1 Carbon dioxide.
- 2 Dry chemical powder.
- 3 Water spray.
- 4 Alcohol or polymer foam.
- 5 Class D fire-extinguishing material only.
- 6 Water may be effective for cooling, but may not effect extinguishment.
- 7 Carbon dioxide, dry chemical powder, alcohol or polymer foam.
- 8 Foam and water spray are effective but may cause frothing.
- 9 Do not use dry chemical powder extinguisher on this material.
- 10 Do not use carbon dioxide extinguisher on this material.
- 11 Noncombustible.
- 12 Do not use water.
- 13 Use extinguishing media appropriate to surrounding fire condition



WASTE-DISPOSAL METHODS

The disposal methods outlined below are intended only as guides. We do not assume responsibility for their use. Careful consideration must be given to the chemical and physical properties of the substance. In addition, local laws and regulations may preclude the use of these methods which are primarily designed for small quantities. Observe all federal, state, and local laws.

The disposal of some chemicals may require deactivation or modification of the material by chemical means. Chemical waste-disposal reactions must be handled with the same care and consideration used with synthetic procedures. Appropriate consideration must be given to reaction conditions, i.e., stoichiometry, order and rate of addition, heat of reaction, evolution of gaseous products, pH, efficiency of stirring, rate of reaction, atmospheric sensitivity, etc.

Chemical waste-disposal reactions should be carried out in a chemical fume hood and in appropriate laboratory glassware. Because these reactions are often vigorous, protective safety equipment such as safety goggles, respirator, gloves, face and/or safety shield and other protective equipment must be used.

Initial reactions in a disposal sequence should be carried out on a small scale (5-10g). The reactant concentrations should not exceed 10% of the reaction volume and the final reaction volume should not exceed 50% of the working capacity of the reaction vessel, regardless of the reaction scale. Larger quantities of the material should be handled in several small-size reactions. To ensure completion of reaction, the waste disposal procedure should be run for at least an additional 4 to 8 hours after all materials have been mixed.

All reactions should be run by technically qualified persons familiar with the potential hazards of the chemical reactions.

- A Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
- B The material should be ignited in the presence of sodium carbonate and slaked lime (calcium hydroxide). The substance should be mixed with vermiculite and then with the dry caustics, wrapped in paper and burned in a chemical incinerator equipped with an afterburner and scrubber.
- C This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.
- D Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.
- E To a solution of the product in water, add an excess of dilute sulfuric acid. Let stand overnight. Remove any insolubles and bury in a landfill site approved for hazardous-waste disposal.
- F Cautiously dissolve the material in water. Neutralize immediately with sodium carbonate or, if the material does not dissolve completely, add a little hydrochloric acid followed by sodium carbonate. Add calcium chloride in excess of the amount needed to precipitate the fluoride and/or carbonate.

Separate the insoluble residue and bury in a landfill site approved for hazardous-waste disposal.

- G Under an inert atmosphere, cautiously add the material to dry butanol in an appropriate solvent. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for venting of large volumes of highly flammable hydrogen and/or hydrocarbon gases. Neutralize the solution with aqueous acid. Filter off any solid residues for disposal as hazardous waste. Burn the liquid portion in a chemical incinerator equipped with an afterburner and scrubber.
- H Neutralize the solution and add filtering agent (10g per 100ml). Evaporate the liquid and bag the residual solid for burial in a landfill site approved for hazardous-waste disposal.
- I Dissolve the solid in (or dilute the solution with) a large volume of water. Carefully add a dilute solution of acetic acid or acetone to the mixture in a well ventilated area. Provisions should be made to vent safely the hydrogen gas given off during the decomposition. Check acidity of the solution and adjust to pH 1 if necessary. Let stand overnight. Neutralize the solution (pH 7). Evaporate the solution and bury the residue in a landfill site approved for hazardous-waste disposal.
- J Cautiously acidify a 3% solution or a suspension of the material to pH 2 with sulfuric acid. Gradually add a 50% excess of aqueous sodium bisulfite with stirring at room temperature. An increase in temperature indicates that a reaction is taking place. If no reaction is observed on the addition of 10% of the sodium bisulfite solution, initiate it by cautiously adding more acid. If manganese, chromium, or molybdenum is present, adjust the pH of the solution to 7 and treat with sulfide to precipitate for burial as hazardous waste. Destroy excess sulfide, neutralize and flush solution down the drain.
- K Please contact the Technical Services Department. Be sure to mention name, catalog number and quantity of the material.
- L The material should be dissolved in 1) water; 2) acid solution or 3) oxidized to a water-soluble state. Precipitate the material as the sulfide, adjusting the pH of the solution to 7 to complete precipitation. Filter the insolubles and dispose of them in a hazardous-waste site. Destroy any excess sulfide with sodium hypochlorite. Neutralize the solution before flushing down the drain.
- M A slurry of the arenediazonium salt with water can be disposed of by adding it gradually to a stirred solution of 5-10% excess 2-naphthol in 3% aqueous sodium hydroxide at 0-20°C. After 12 hours, the resulting azo dye is filtered and either incinerated or buried in a landfill site approved for hazardous-waste disposal. Neutralize the remaining solution before disposal.
- N For small quantities: cautiously add to a large stirred excess of water. Adjust the pH to neutral, separate any insoluble solids or liquids and package them for hazardous-waste disposal. Flush the aqueous solu-

tion down the drain with plenty of water. The hydrolysis and neutralization reactions may generate heat and fumes which can be controlled by the rate of addition.

- O Bury in a landfill site approved for the disposal of chemical and hazardous waste.
- P Material in the elemental state should be recovered for reuse or recycling.
- Q Cautiously make a 5% solution of the material in water or dilute acid. There may be a vigorous, exothermic reaction and fumes may be generated due to the hydrolysis of the material. Control any reaction by cooling and by the rate of addition of the material. Gradually add dilute ammonium hydroxide to pH 10. Filter off any precipitate for disposal in a chemical landfill. If there is no precipitation, gradually adjust the pH from 10 to 6, stopping when precipitation occurs.
- R Catalysts and expensive metals should be recovered for reuse or recycling.
- S Treat a dilute basic solution (pH 10-11) of the material with a 50% excess of commercial laundry bleach. Control the temperature by the addition rate of bleach and adjust pH if necessary. Let stand overnight. Cautiously adjust solution to pH 7. Vigorous evolution of gas may occur. Filter any solids for burial in a chemical landfill. Precipitate any heavy metals by addition of sulfide and isolate for burial. Additional equivalents of hypochlorite may be needed if the metal can be oxidized to a higher valence state. For metal carbonyls, the reaction should be carried out under nitrogen.
- T Cautiously make a 5% solution of the product in water; vent because of possible vigorous evolution of flammable hydrogen gas. Acidify the solution to pH 1 by adding 1M sulfuric acid dropwise. Acidification will cause vigorous evolution of hydrogen gas. Allow the solution to stand overnight. Evaporate the solution to dryness and bury the residue in a landfill site approved for hazardous-waste disposal.
- U Take the material (or a solution) and make a 5% solution in tetrahydrofuran. Cautiously add the solution dropwise to an ice-cooled, stirred basic solution of commercial bleach. Oxidation may release flammable hydrocarbon gases which must be vented. Let stand overnight. Adjust the pH to 7 and destroy excess hypochlorite with sodium bisulfite before disposal of the solution.
- V Under an inert atmosphere cautiously add dry butanol or a mixture of dry butanol in an appropriate solvent, to a solution of the material in tetrahydrofuran. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for the venting of a large volume of flammable hydrogen gas. When gas evolution ceases, cautiously add a basic hypochlorite solution dropwise to the reaction solution. Let stand overnight. Neutralize the solution and treat with sodium bisulfite to destroy any excess hypochlorite. Filter any solids for burial in a landfill site approved for hazardous-waste disposal.

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name _____ Date _____

DOT Classification _____ Job Number _____

CAS Number _____

REFERENCES CONSULTED (circle; also include MSDS if appropriate.)
NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris(vol.III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: _____

CHEMICAL PROPERTIES: (Synonyms: _____)

Chemical Formula _____ MW _____ Ionization Potential _____
Physical State _____ Boiling Point _____ Freezing Point _____
Flash Point _____ Flammable Limits _____ Vapor Pressure _____
Specific Gravity/Density _____ Odor/Odor Threshold _____
Solubility-water: _____ Solubility-other: _____
Incompatibilities & Reactivity: _____

TOXICOLOGICAL PROPERTIES:

Exposure Limits: TLV-TWA (ACGIH) _____ PEL (OSHA) _____
STEL _____ Ceiling Limits _____ IDLH _____
Toxicity Data: (Indicate duration of study)
Human; IHL _____ Dermal _____ Oral _____
Rat/Mouse; IHL _____ Dermal _____ Oral _____
Aquatic: _____ Other: _____
Carcinogen _____ Mutagen _____ Reproductive Toxin _____
Route(s) of exposure - (circle all that apply): Inhalation Ingestion
Dermal Contact Eye(ocular) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: (personal protective measures)

Respirators:
Protective Clothing:
Special Equipment:

DISPOSAL, FIRE and SPILLS: (Use numbered codes; see attached sheets for explanation.)

Disposal _____ Fire _____ Leaks&Spills _____
Decomposition Products: _____

FIRST AID:

ING:
IHL:
Eye/Skin:

SYMPTOMS:

acute(immediate) exposure effects:

chronic(long term) exposure effects:

reproductive effects:

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name Chromium (metal) Date 11-6-87

DOT Classification _____ Job Number F040624

CAS Number 7440-47-3

REFERENCES CONSULTED (circle; also include MSDS if appropriate.)

NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris (vol. III)

ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich

RTECS other: Sittig

CHEMICAL PROPERTIES: (Synonyms: Chromium metal, insoluble salts)

Chemical Formula Cr MW 52 Ionization Potential N/A
Physical State variable Boiling Point 4842° F Freezing Point 3339° F
Flash Point variable Flammable Limits LEL-.23% Vapor Pressure variable
Specific Gravity/Density 7.2@82° F Odor/Odor Threshold none

Solubility-water: Insoluble Solubility-other: _____
Incompatibilities & Reactivity: strong oxidizers, powdered metal is explosive

TOXICOLOGICAL PROPERTIES:

Exposure Limits: TLV-TWA (ACGIH) 0.5 mg/m³ PEL (OSHA) 1.0 mg/m³
STEL none est. Ceiling Limits none est. IDLH 500 mg/m³

Toxicity Data: (Indicate duration of study)

Human; IHL _____ Dermal _____ Oral _____

Rat/Mouse; IHL _____ Dermal _____ Oral _____

Aquatic: _____ Other: _____

Carcinogen N/A Mutagen N/A Reproductive Toxin N/A

Route(s) of exposure - (circle all that apply): Inhalation Ingestion

Dermal Contact Eye(ocular) Dermal Absorption _____ Other _____

HANDLING RECOMMENDATIONS: (personal protective measures)

Respirators: 5 mg/m³ - SCBA

Protective Clothing: Prevent skin/eye contact.

Special Equipment: Wear impervious clothing.

DISPOSAL, FIRE and SPILLS: (Use numbered codes; see attached sheets for explanation.)

Disposal P.O Fire 13 Leaks&Spills 3,4,6,7,8,9

Decomposition Products: _____

FIRST AID:

ING: Large amounts of water, induce vomiting, medical attent. immed.

IHL: Move to fresh air, artificial resp. if necessary, medical atten.

Eye/Skin: Irrigate/rinse with large amounts of water. Wash skin thoroughly with soap & water.

SYMPTOMS:

acute(immediate) exposure effects: Contact dermatitis, ulceration of skin & nasal mucosa, irritation of eyes & mucous membranes.

chronic(long term) exposure effects: Not often encountered with the 3+ state since chromium compounds in this state are of a lower order toxicity.

reproductive effects: None specified for humans.

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name Lead Date 1-6-87

DOT Classification _____ Job Number F0110624

CAS Number 7439-92-1

REFERENCES CONSULTED (circle; also include MSDS if appropriate.)

NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris (vol. III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: Sittig

CHEMICAL PROPERTIES: (Synonyms: White lead, plumbum)

Chemical Formula Pb MW 207 Ionization Potential N/A
Physical State Variable Boiling Point 3164°F Freezing Point _____
Flash Point Incombust. Flammable Limits Incombust Vapor Pressure variable
Specific Gravity/Density 11.3 @61°F Odor/ Odor Threshold None
Solubility-water: Insoluble Solubility-other: _____
Incompatibilities & Reactivity: Strong oxidizers, peroxides, active metals

TOXICOLOGICAL PROPERTIES:

Exposure Limits: TLV-TWA (ACGIH) .15 mg/m³ PEL (OSHA) 50ug/m³
STEL None est. Ceiling Limits None est. IDLH Variable

Toxicity Data: (Indicate duration of study)

Human; IHL _____ Dermal _____ Oral Td10 450mg/kg/6Y

Rat/Mouse; IHL _____ Dermal _____ Oral Td10 790mg/kg

Aquatic: Unknown Other: Toxicity varies with lead cpds.

Carcinogen Indef. Mutagen Indef. Reproductive Toxin exp. teratogen

Route(s) of exposure - (circle all that apply): Inhalation Ingestion
Dermal Contact Eye (ocular) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: (personal protective measures)

Respirators: 5mg/m³ high efficiency particulate respirator, other concentrations - SCBA.

Protective Clothing: Avoid skin and eye contact

Special Equipment: None

DISPOSAL, FIRE and SPILLS: (Use numbered codes; see attached sheets for explanation.)

Disposal P Fire 13 Leaks & Spills 7, 8, 10
Decomposition Products: Toxic fumes of lead

FIRST AID:

ING: Give water, induce vomiting, medical attention immed.

IHL: Move to fresh air, artificial resp. if necessary, medical attent.

Eye/Skin: Irrigate/wash with water. Wash skin thoroughly with soap & water.

SYMPTOMS:

acute (immediate) exposure effects: Cumulative neurotoxin - commonly occurs from prolonged exposure. Symptoms include stomach distress, vomiting, diarrhea, black stools, anemia, nervous system effects.

chronic (long term) exposure effects: 3 clinical types: a - alimentary - abdominal pain, discomfort, constipation or diarrhea, metallic taste, lead line on gum
b - adache. b - neuromuscular, muscle weakness, joint/muscle pain, dizziness, insomnia, paralysis
c - encephalic: brain involvement, stupor, coma, death, rare.

reproductive effects: Human epid. studies have concluded that lead is a poison to male & female germ cells; increased incidence of miscarriages, stillbirths, sterility in females; sperm depression & decreased motility in males

11-6-85

Common Synonyms Oil of vitriol Battery acid Fertilizer acid Chamber acid	City liquid	Colorless	Odorless
Sinks and mixes violently with water. Irritating mist is produced.			
AVOID CONTACT WITH LIQUID. Keep people away. Wear goggles, self-contained breathing apparatus, and rubber overclothing. Stop discharge if possible. Isolate and remove discharged material. Notify local health and pollution control agencies.			
Fire	Not flammable. May cause fire on contact with combustibles. Flammable gas may be produced on contact with metals. POISONOUS GAS MAY BE PRODUCED IN FIRE. Wear goggles, self-contained breathing apparatus, and rubber overclothing. DO NOT USE WATER ON ADJACENT FIRES. Extinguish with dry chemical or carbon dioxide.		
Exposure	CALL FOR MEDICAL AID. MIST Irritating to eyes, nose and throat. If inhaled, will cause coughing, difficult breathing, or loss of consciousness. Move to fresh air. IF IN EYES, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.		
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.		
1. RESPONSE TO DISCHARGE (See Response Methods Handbook) Issue warning-corrosive Restrict access Disperse and flush with care		2. LABEL 2.1 Category: Corrosive 2.2 Class: 8	
3. CHEMICAL DESIGNATIONS 3.1 CG Compatibility Class: Sulfuric acid 3.2 Formula: H ₂ SO ₄ 3.3 IMO/UN Designation: 8.0/1830 3.4 DOT ID No.: 1830 3.5 CAS Registry No.: 7664-93-9		4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless (pure) to dark brown 4.3 Odor: Odorless unless hot, then choking	
5. HEALTH HAZARDS			
5.1 Personal Protective Equipment: Safety shower; eyewash fountain; safety goggles; face shield; approved respirator (self-contained or air-line); rubber safety shoes; rubber apron. 5.2 Symptoms Following Exposure: Inhalation of vapor from hot, concentrated acid may injure lungs. Swallowing may cause severe injury or death. Contact with skin or eyes causes severe burns. 5.3 Treatment of Exposure: Call a doctor. INHALATION: observe victim for delayed pulmonary reaction. INGESTION: have victim drink water if possible; do NOT induce vomiting. EYES AND SKIN: wash with large amounts of water for at least 15 min.; do not use oils or ointments in eyes; treat skin burns. 5.4 Threshold Limit Value: 1 mg/m ³ 5.5 Short Term Inhalation Limits: 10 mg/m ³ for 5 min.; 5 mg/m ³ for 10 min.; 2 mg/m ³ for 30 min.; 1 mg/m ³ for 60 min. 5.6 Toxicity by Ingestion: No effects except those secondary to tissue damage. 5.7 Late Toxicity: None 5.8 Vapor (Gas) Irritant Characteristics: Vapors from hot acid (77-98%) cause moderate irritation of eyes and respiratory system. Effect is temporary. 5.9 Liquid or Solid Irritant Characteristics: 77-98% acid causes severe second- and third-degree burns of skin on short contact and is very injurious to the eyes. 5.10 Odor Threshold: Greater than 1 mg/m ³ 5.11 IDLH Value: 80 mg/m ³			

- 6.1 Flash Point: Not flammable
- 6.2 Flammable Limits in Air: Not flammable
- 6.3 Fire Extinguishing Agents: Not pertinent
- 6.4 Fire Extinguishing Agents Not to be Used: Water used on adjacent fires should be carefully handled.
- 6.5 Special Hazards of Combustion Products: Not pertinent
- 6.6 Behavior in Fire: Not flammable
- 6.7 Ignition Temperature: Not flammable
- 6.8 Electrical Hazard: None
- 6.9 Burning Rate: Not flammable
- 6.10 Adiabatic Flame Temperature: Data not available
- 6.11 Stoichiometric Air to Fuel Ratio: Data not available
- 6.12 Flame Temperature: Data not available

7.1 Reactivity With Water: Reacts violently with evolution of heat. Spattering occurs when water is added to the compound.

7.2 Reactivity with Common Materials: Extremely hazardous in contact with many materials, particularly metals and combustibles. Dilute acid reacts with most metals, releasing hydrogen which can form explosive mixtures with air in confined spaces.

7.3 Stability During Transport: Stable

7.4 Neutralizing Agents for Acids and Caustics: Dilute with water, then neutralize with lime, limestone, or soda ash.

7.5 Polymerization: Not pertinent

7.6 Inhibitor of Polymerization: Not pertinent

8.1 Aquatic Toxicity: 24.5 ppm/24 hr/bluegill/tetral/tresh water
42.5 ppm/48 hr/prawn/LC₅₀/salt water

8.2 Waterfowl Toxicity: Data not available

8.3 Biological Oxygen Demand (BOD):
None

8.4 Food Chain Concentration Potential:
None

9.1 **Grades of Purity:** CP, USP, Technical, at 33% to 98% (50° Be to 66° Be).

9.2 **Storage Temperature:** Ambient

9.3 **Inert Atmosphere:** No requirement

9.4 **Venting:** Open

7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 2

11.1 Code of Federal Regulations:	
Corrosive material	
11.2 NAS Hazard Rating for Bulk Water Transportation:	
Category	Rating
Fire.....	0
Health	
Vapor Irritant.....	2
Liquid or Solid Irritant.....	4
Poisons.....	2
Water Pollution	
Human Toxicity.....	2
Aquatic Toxicity.....	3
Aesthetic Effect.....	2
Reactivity	
Other Chemicals.....	4
Water.....	3
Self Reaction.....	0

12. PHYSICAL AND CHEMICAL PROPERTIES

- 12.1 **Physical State at 15°C and 1 atm:**
Liquid
- 12.2 **Molecular Weight:** 98.08
- 12.3 **Boiling Point at 1 atm:**
 $644^{\circ}\text{F} = 340^{\circ}\text{C} = 613^{\circ}\text{K}$
- 12.4 **Freezing Point:** Not pertinent
- 12.5 **Critical Temperature:** Not pertinent
- 12.6 **Critical Pressure:** Not pertinent
- 12.7 **Specific Gravity:**
1.84 at 20°C (liquid)
- 12.8 **Liquid Surface Tension:** Not pertinent
- 12.9 **Liquid Water Interfacial Tension:**
Not pertinent
- 12.10 **Vapor (Gas) Specific Gravity:**
Not pertinent
- 12.11 **Ratio of Specific Heats of Vapor (Gas):**
Not pertinent
- 12.12 **Latent Heat of Vaporization:**
Not pertinent
- 12.13 **Heat of Combustion:** Not pertinent
- 12.14 **Heat of Decomposition:** Not pertinent
- 12.15 **Heat of Solution** —418.0 Btu/lb
 $= -232.2 \text{ cal/g} = -9.715 \times 10^4 \text{ J/kg}$
- 12.16 **Heat of Polymerization:** Not pertinent
- 12.25 **Heat of Fusion:** Data not available
- 12.26 **Limiting Value:** Data not available
- 12.27 **Real Vapor Pressure:** Low

*Physical properties apply to concentrated (98%) acid unless otherwise stated. More dilute acid is more water-like.

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SFA	SULFURIC ACID
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12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit-inch per hour- square foot-F	Temperature (degrees F)	Centipoise
35	115.400	35	.330		N		N
40	115.200	40	.331		O		O
45	115.000	45	.331		T		T
50	114.900	50	.332				
55	114.700	55	.333		P		P
60	114.500	60	.333		E		E
65	114.299	65	.334		R		R
70	114.200	70	.334		T		T
75	114.000	75	.335		I		I
80	113.799	80	.335		N		N
85	113.599	85	.336		E		E
90	113.500	90	.336		N		N
95	113.299	95	.337		T		T
100	113.099	100	.338				
105	112.900	105	.338				
110	112.799	110	.339				
115	112.599	115	.339				
120	112.400	120	.340				

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	M I S C I B L E		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T

SULFURIC ACID, SPENT

SAC

Common Synonyms Dilute sulfuric acid		Odorless
Oily liquid		Colorless to dark brown
Sinks and mixes with water.		
<p>AVOID CONTACT WITH LIQUID. Keep people away. Wear goggles, and rubber overclothing (including gloves). Stop discharge if possible. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>		
Fire	<p>Not flammable. Poisonous gas may be produced in fire. Flammable gas may be produced on contact with metals. Wear goggles, self-contained breathing apparatus, and rubber overclothing. Extinguish adjacent fires with dry chemical or carbon dioxide.</p>	
Exposure	<p>CALL FOR MEDICAL AID. LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.</p>	
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>	
1. RESPONSE TO DISCHARGE (See Response Methods Handbook) Issue warning-corrosive Restrict access Disperse and flush		2. LABEL 2.1 Category: Corrosive 2.2 Class: 8
3. CHEMICAL DESIGNATIONS 3.1 CG Compatibility Class: Sulfuric acid 3.2 Formula: $H_2SO_4-H_2O$ 3.3 IMO/UN Designation: 8.0/1832 3.4 DOT ID No.: 1832 3.5 CAS Registry No.: Data not available		4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless to dark brown 4.3 Odor: Odorless
5. HEALTH HAZARDS 5.1 Personal Protective Equipment: Chemical safety goggles and face shield; rubber gloves, boots, and apron. 5.2 Symptoms Following Exposure: Contact with eyes or skin causes severe burns, the severity depending on the strength of the acid. Ingestion can cause severe irritation of mouth and stomach. 5.3 Treatment of Exposure: Call a doctor. INGESTION: do NOT induce vomiting. SKIN OR EYES: flush affected parts with large amounts of water for at least 15 min.; do NOT use oils or ointments in eyes; treat burns. 5.4 Threshold Limit Value: Data not available 5.5 Short Term Inhalation Limits: Not pertinent 5.6 Toxicity by Ingestion: No effects except those stemming from tissue damage. 5.7 Late Toxicity: None 5.8 Vapor (Gas) Irritant Characteristics: Non-volatile 5.9 Liquid or Solid Irritant Characteristics: Severe skin irritant. Causes second-and third-degree burns on short contact and is very injurious to the eyes. 5.10 Odor Threshold: Not pertinent 5.11 IDLH Value: Data not available		

6. FIRE HAZARDS 6.1 Flash Point: Not flammable 6.2 Flammable Limits in Air: Not flammable 6.3 Fire Extinguishing Agents: Not pertinent 6.4 Fire Extinguishing Agents Not to be Used: Not pertinent 6.5 Special Hazards of Combustion Products: Not pertinent 6.6 Behavior in Fire: Not pertinent 6.7 Ignition Temperature: Not flammable 6.8 Electrical Hazard: Not pertinent 6.9 Burning Rate: Not flammable 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stoichiometric Air to Fuel Ratio: Data not available 6.12 Flame Temperature: Data not available	10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook) A-P								
7. CHEMICAL REACTIVITY 7.1 Reactivity With Water: None, unless strength is above 80-90%, in which case heat is liberated. 7.2 Reactivity with Common Materials: Attacks many metals, releasing flammable hydrogen gas. 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Limestone, lime, or soda ash. 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 2	11. HAZARD CLASSIFICATIONS 11.1 Code of Federal Regulations: Corrosive material 11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed 11.3 NFPA Hazard Classification: <table border="0"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue)</td> <td>3</td> </tr> <tr> <td>Flammability (Red)</td> <td>0</td> </tr> <tr> <td>Reactivity (Yellow)</td> <td>2</td> </tr> </table>	Category	Classification	Health Hazard (Blue)	3	Flammability (Red)	0	Reactivity (Yellow)	2
Category	Classification								
Health Hazard (Blue)	3								
Flammability (Red)	0								
Reactivity (Yellow)	2								
8. WATER POLLUTION 8.1 Aquatic Toxicity: 24.5 ppm/24 hr/bluegill/lethal/fresh water 42.5 ppm/48 hr/prawn/LC ₅₀ /salt water 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): None 8.4 Food Chain Concentration Potential: None	12. PHYSICAL AND CHEMICAL PROPERTIES 12.1 Physical State at 15°C and 1 atm: Liquid 12.2 Molecular Weight: Not pertinent 12.3 Boiling Point at 1 atm: 212°F = 100°C = 373°K 12.4 Freezing Point: Not pertinent 12.5 Critical Temperature: Not pertinent 12.6 Critical Pressure: Not pertinent 12.7 Specific Gravity: 1.39 at 20°C (liquid) 12.8 Liquid Surface Tension: Not pertinent 12.9 Liquid Water Interfacial Tension: Not pertinent 12.10 Vapor (Gas) Specific Gravity: Not pertinent 12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 12.12 Latent Heat of Vaporization: Not pertinent 12.13 Heat of Combustion: Not pertinent 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: <-418 Btu/lb = <-232 cal/g = <8.71 X 10 ⁴ J/kg 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: Data not available 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: Data not available								
9. SHIPPING INFORMATION 9.1 Grades of Purity: Purity depends on the process in which the original acid is used. The strength (in water) is probably below 80%, and the solution may contain a wide variety of metals and organic compounds in solution. 9.2 Storage Temperature: Ambient 9.3 Inert Atmosphere: No requirement 9.4 Venting: Open	NOTES								

11-6-82

SAC

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	M I S C I B L E		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T

OILS, MISCELLANEOUS: LUBRICATING

OLB

Common Synonyms Crankcase oil Transmission oil Motor oil		Oily liquid Floats on water.	Yellow-brown	Lube oil odor
Stop discharge if possible. Call fire department. Avoid contact with liquid. Isolate and remove discharged material. Notify local health and pollution control agencies.				
Fire		Combustible. Extinguish with dry chemical, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.		
Exposure		CALL FOR MEDICAL AID. LIQUID Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.		
Water Pollution		Effect of low concentrations on aquatic life is unknown. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.		
1. RESPONSE TO DISCHARGE (See Response Methods Handbook) Mechanical containment Should be removed Chemical and physical treatment		2. LABEL 2.1 Category: None 2.2 Class: Not pertinent		
3. CHEMICAL DESIGNATIONS 3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures 3.2 Formula: Not applicable 3.3 IMO/UN Designation: 3.3/1270 3.4 DOT ID No.: 1270 3.5 CAS Registry No.: Data not available		4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid 4.2 Color: Yellow fluorescent 4.3 Odor: Characteristic		
5. HEALTH HAZARDS 5.1 Personal Protective Equipment: Protective gloves; goggles or face shield. 5.2 Symptoms Following Exposure: INGESTION: minimal gastrointestinal tract irritation; increased frequency of bowel passage may occur. ASPIRATION: pulmonary irritation is normally minimal but may become more severe several hours after exposure. 5.3 Treatment of Exposure: INGESTION: do NOT lavage or induce vomiting. ASPIRATION: treatment probably not required; delayed development of pulmonary irritation can be detected by serial chest x-rays. EYES: wash with copious quantity of water. SKIN: wipe off and wash with soap and water. 5.4 Threshold Limit Value: Data not available 5.5 Short Term Inhalation Limits: Data not available 5.6 Toxicity by Ingestion: Grade 1; LD ₅₀ = 5 to 15 g/kg 5.7 Late Toxicity: Data not available 5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary. 5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin. 5.10 Odor Threshold: Data not available 5.11 IDLH Value: Data not available				
6. FIRE HAZARDS 6.1 Flash Point: 300°F C.C. 6.2 Flammable Limits in Air: Data not available 6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide 6.4 Fire Extinguishing Agents Not to be Used: Water of foam may cause frothing. 6.5 Special Hazards of Combustion Products: Not pertinent 6.6 Behavior in Fire: Not pertinent 6.7 Ignition Temperature: 500°F-700°F 6.8 Electrical Hazard: Not pertinent 6.9 Burning Rate: 4 mm/min. 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stoichiometric Air to Fuel Ratio: Data not available 6.12 Flame Temperature: Data not available				
7. CHEMICAL REACTIVITY 7.1 Reactivity With Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 33				
8. WATER POLLUTION 8.1 Aquatic Toxicity: Data not available 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): Data not available 8.4 Food Chain Concentration Potential: None				
9. SHIPPING INFORMATION 9.1 Grades of Purity: Various viscosities 9.2 Storage Temperature: Ambient 9.3 Inert Atmosphere: No requirement 9.4 Venting: Open (flame arrester)				
10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook) A-T-U				
11. HAZARD CLASSIFICATIONS 11.1 Code of Federal Regulations: Not listed 11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed 11.3 NFPA Hazard Classification: Category Classification Health Hazard (Blue) 0 Flammability (Red) 1 Reactivity (Yellow) 0				
12. PHYSICAL AND CHEMICAL PROPERTIES 12.1 Physical State at 15°C and 1 atm: Liquid 12.2 Molecular Weight: Not pertinent 12.3 Boiling Point at 1 atm: Very high 12.4 Freezing Point: Not pertinent 12.5 Critical Temperature: Not pertinent 12.6 Critical Pressure: Not pertinent 12.7 Specific Gravity: (est.) 0.902 at 20°C (liquid) 12.8 Liquid Surface Tension: 36-37.5 dynes/cm = 0.036-0.0375 N/m at 20°C 12.9 Liquid Water Interfacial Tension: 33-54 dynes/cm = 0.033-0.054 N/m at 20°C 12.10 Vapor (Gas) Specific Gravity: Not pertinent 12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 12.12 Latent Heat of Vaporization: Not pertinent 12.13 Heat of Combustion: -18,486 Btu/lb = -10,270 cal/g = -429.98 X 10 ³ J/kg 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: Not pertinent 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: Data not available 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: Data not available				
NOTES				

11-6-87

OILB

OILS, MISCELLANEOUS: LUBRICATING

12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot (estimate)	Temperature (degrees F)	British thermal unit per pound-F (estimate)	Temperature (degrees F)	British thermal unit-inch per hour- square foot-F (estimate)	Temperature (degrees F)	Centipoise
50	56.180	50	.460	35	.920	100.42	275.000
52	56.180	52	.461	40	.919		
54	56.180	54	.462	45	.918		
56	56.180	56	.463	50	.917		
58	56.180	58	.464	55	.916		
60	56.180	60	.465	60	.915		
62	56.180	62	.466	65	.914		
64	56.180	64	.467	70	.913		
66	56.180	66	.468	75	.912		
68	56.180	68	.469	80	.911		
70	56.180	70	.470	85	.910		
72	56.180	72	.471	90	.909		
74	56.180	74	.472	95	.908		
76	56.180	76	.473	100	.907		
78	56.180	78	.474	105	.906		
80	56.180	80	.475	110	.905		
82	56.180	82	.476	115	.904		
84	56.180	84	.477	120	.903		
		86	.478				
		88	.479				
		90	.480				
		92	.481				
		94	.482				
		96	.483				
		98	.484				
		100	.485				

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch (estimate)	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I N S O L U B L E	70	.042		N O T		N O T
		75	.049				
		80	.057				
		85	.065				
		90	.076				
		95	.087				
		100	.100				
		105	.114				
		110	.131				
		115	.149				
		120	.170				
		125	.193				
		130	.218				
		135	.247				
		140	.279				
		145	.314				
		150	.352				
		155	.395				
		160	.443				
		165	.495				
		170	.552				
		175	.615				
		180	.683				
		185	.758				
		190	.841				
		195	.930				
					P E R T I N E N T		P E R T I N E N T

10. HAZARD ASSESSMENT CODE		NOTES
A-T-U (See Hazard Assessment Handbook)		
II. HAZARD CLASSIFICATIONS		
Code of Federal Regulations: Combustible liquid 11.2 NAS Hazard Rating for Bulk Water Transportation Category Rating 1		
11.3 NFPA Hazard Classifications Health Hazard (Blue) 0 Flammability (Red) 2 Reactivity (Yellow) 0		
12. PHYSICAL AND CHEMICAL PROPERTIES		
Physical State at 15°C and 1 atm: Liquid 12.1 Molecular Weight Not pertinent Boiling Point at 1 atm: 590-700°F = 310-371°C = 563-644°K Freezing Point Not pertinent Critical Pressure Not pertinent Critical Temperature Not pertinent Specific Gravity: 0.82 at 15°C (liquid) Liquid Surface Tension (est.) 25 dynes/cm = 0.025 N/m at 20°C Liquid Water Interfacial Tension (est.) 50 dynes/cm = 0.05 N/m at 20°C Vapor (Gas) Specific Gravity: Not pertinent Ratio of Specific Heats of Vapor (Gas): Not pertinent Latent Heat of Vaporization: Not pertinent Heat of Combustion: -18,540 Btu/lb = -10,300 cal/g = -43,124 X 10 ³ J/kg Heat of Decomposition Not pertinent Heat of Polymerization Not pertinent Heat of Fusion Data not available 12.25 Limiting Value Data not available 12.26 Field Vapor Pressure Data not available 12.27		
9. SHIPPING INFORMATION		
Grades of Purity: Commercial Storage Temperature: Ambient 12.2 Inert Atmosphere: No requirement 12.3 Venting: Open (flame arrester) 12.4		
8. WATER POLLUTION		
Aquatic Toxicity: 500 ppm/"/salmon Fingerling/lethal/fresh water "Time period not specified" 12.2 Waterborne Toxicity: Data not available 12.3 Biological Oxygen Demand (BOD): 53%, 5 days 12.4 Food Chain Concentration Potential: None		
7. CHEMICAL REACTIVITY		
Reactivity with Water: No reaction 7.1 Reactivity with Common Materials: No reaction 7.2 Stability During Transport: Stable 7.3 Neutralizing Agents for Acids and Alkalies: Not pertinent 7.4 Corrosives: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 33		
6. FIRE HAZARDS		
Flash Point: 140°F (m.n.) C.C. 6.1 Flammable Limits in Air: 0.6%-4.6% 6.2 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide 6.3 Fire Extinguishing Agents: Not to be used: Water may be ineffective 6.4 Special Hazards of Combustion: Product: Not pertinent 6.5 Behavior in Fire: Not pertinent 6.6 Ignition Temperature: 475°F 6.7 Electrical Hazard: Not pertinent 6.8 Burning Rate: 4 mm/min. 6.9 Adiabatic Flame Temperature: Data not available 6.10 Stoichiometric Air to Fuel Ratio: Data not available 6.11 Flame Temperature: Data not available 6.12		

Common Synonyms Plant spray oil Domestic oil Foliage oil Kerosene, heavy		Stop discharge if possible.	
Call fire department. Avoid contact with liquid. Isolate and remove discharged material. Notify local health and pollution control agencies.		Combustible. Extinguish with foam, dry chemical, or carbon dioxide. Water may be ineffective on fire.	
Fire		Fire	
Exposure		Exposure	
Water Pollution		Water Pollution	
1. RESPONSE TO DISCHARGE (See Response Methods Handbook) 2.1 Category: None 2.2 Class: Not pertinent		3. CHEMICAL DESIGNATIONS 4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless to light brown 4.3 Odor: Like kerosene; like fuel oil 4.4 DOT ID No.: 1270 4.5 IMO/UN Designation: 3.3/1270 4.6 CAS Registry No.: Data not available	
4. OBSERVABLE CHARACTERISTICS		5. HEALTH HAZARDS	

OSY

OILS, MISCELLANEOUS: SPRAY

12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F (estimate)	Temperature (degrees F)	British thermal unit-inch per hour- square foot-F (estimate)	Temperature (degrees F)	Centipoise
34	52.050	50	.460	35	.920	-35	10.600
36	51.980	52	.461	40	.919	-30	9.614
38	51.910	54	.462	45	.918	-25	8.739
40	51.850	56	.463	50	.917	-20	7.960
42	51.780	58	.464	55	.916	-15	7.266
44	51.710	60	.465	60	.915	-10	6.646
46	51.640	62	.466	65	.914	-5	6.090
48	51.570	64	.467	70	.913	0	5.592
50	51.500	66	.468	75	.912	5	5.144
52	51.430	68	.469	80	.911	10	4.740
54	51.360	70	.470	85	.910	15	4.376
56	51.290	72	.471	90	.909	20	4.046
58	51.220	74	.472	95	.908	25	3.747
60	51.150	76	.473	100	.907	30	3.476
62	51.080	78	.474	105	.906	35	3.229
64	51.010	80	.475	110	.905	40	3.004
66	50.940	82	.476	115	.904	45	2.799
68	50.870	84	.477	120	.903	50	2.612
70	50.800	86	.478			55	2.440
72	50.740	88	.479			60	2.282
74	50.670	90	.480			65	2.138
76	50.600	92	.481			70	2.005
78	50.530	94	.482			75	1.883
80	50.460	96	.483				
82	50.390	98	.484				
84	50.320	100	.485				

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch (estimate)	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I	70	.042		N		N
	N	75	.049		O		O
	S	80	.057		T		T
	O	85	.065				
	L	90	.076		P		P
	U	95	.087		E		E
	B	100	.100		R		R
	L	105	.114		T		T
	E	110	.131		I		I
		115	.149		N		N
		120	.170		E		E
		125	.193		N		N
		130	.218		T		T
		135	.247				
		140	.279				
		145	.314				
		150	.352				
		155	.395				
		160	.443				
		165	.495				
		170	.552				
		175	.615				
		180	.683				
		185	.758				
		190	.841				
		195	.930				

Medtox Hotline

1. Twenty-four hour answering service - (501) 370-8263

What to Report:

- ° State: "This is an emergency."
- ° Your name, region, and site
- ° Telephone number to reach you
- ° Name of person injured or exposed
- ° Nature of emergency
- ° Action taken

2. One of three toxicologists (Drs. Raymond Harbison, Richard Freeman, or Robert James) will contact you. Repeat the information given to the answering service.

3. If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact is made:

E & E Corporate Headquarters (EST 0830-1700) - (716) 632-4491

a. Twenty-four hour line - (716) 631-9530

b. Corporate Safety Director - Paul Jonmaire (Office) (716) 632-4491

c. Assistant Corporate Safety Officer - Steve Sherman (home

Not responsive

Not responsive

Regional Office

Office Phone Number: (312) 663-9415

	<u>Name</u>	<u>Home</u>
Team Leader	Rene' Van Someren	Not responsive
Regional Safety Coordinator	Paul Moss	

ECOLOGIST & ENVIRONMENT, INC.
REGION V EMERGENCY INFORMATION

Revised 4/87
PDM

NAME

EMERGENCY CONTACTS

BLOOD
TYPE

DOCTOR/HOSPITAL PREFERENCES

SPECIAL MEDICAL
INFORMATION

Not responsive

ECOLOGY & ENVIRONMENT, INC.
REGION V EMERGENCY INFORMATION

Revised 4/87
PJM

NAME

EMERGENCY CONTACTS

BLOOD
TYPE

DOCTOR/HOSPITAL PREFERENCES

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Not responsive

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NAME

EMERGENCY CONTACTS

BLOOD
TYPE

DOCTOR/HOSPITAL PREFERENCES

SPECIAL MEDICAL
INFORMATION

Not responsive

PROCEDURES TO FOLLOW WHEN INVOLVED IN A VEHICULAR ACCIDENT ON COMPANY TIME

1. Determine if there are any injuries. If so, call for police and medical assistance immediately.
2. Then call the office as soon as possible and ask to speak to the following people in order they appear here: Mary Ann Spidalette, Kathy Getty, Rene Van Someren, Jerry Oskvarek, Tim McDermott, Mary Jane Ripp or Mike Miller. If there are injuries to any E & E personnel or if there are serious injuries to the other party, try to reach any of these people at home. Try to have as much information as possible about any injuries sustained.
3. If there are no injuries, call the police and then call the office as soon as possible.

You will be asked to provide the following information when you call in to the office. Obtain as much information as possible before calling.

1. Name(s) of the owner(s) of the other vehicle(s) involved and any occupants.
2. Insurance carrier(s) of the other party(ies).
3. License plate and vehicle registration numbers of the other vehicle(s) involved. In addition, note the make, model and year of the car(s).
4. Name(s) of our driver and any occupants.
5. License plate and serial numbers of our vehicle as well as the make, model and year. If our vehicle is a rental car, also state the rental agency and location.
6. Location and time of the accident.
7. Description of the accident itself. Include circumstances such as the weather and physical surroundings. Upon return to the office, you will be asked to provide a sketch of the accident so you should rough draft the sketch at the scene.
8. Obtain at least one copy of the police report. This will be submitted to Buffalo with a memo and the sketch.
9. Description of damage done to our vehicle and any other involved vehicles. If you have a camera, take pictures of the damage done and any other informative or contributing conditions.
10. If the vehicle is ours and not a rental, you will need to obtain 3 estimates for repair. Depending on the degree of damage, this may be done in the field or back in Chicago.

When completing the police report, you may need the following information if you were driving one of our vehicles:

1. Our vehicles are owned by the U.S. Government; Environmental Protection Agency; c/o Ecology and Environment, Inc., Hans Neumaier, Director of Administrative Services.
2. Our insurance is with Fireman's Fund, c/o E & E, Hans Neumaier, Director of Administrative Services.
3. Buffalo's address is:

195 Holtz
Buffalo, NY 14225

91Q:1X

SITE DOSIMETER LOG

TDD# FDS-8709-057

SITE NAME BURNS Cold Forge

SITE SAFETY OFFICER Timothy Mayers

WEEK OF 11/30/87

NAME AND
DOSIM. #

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Mayers							
Kouris							
Corns							
Anderson							

To the nearest half-hour, record time spent downrange as "S" (e.g., S: 2.5 hrs), time spent in active PDS operation as "P", and any time spent downrange in rescue activity as "R".

ECOLOGY AND ENVIRONMENT, INC.
CHICAGO

	<u>EQUIPMENT USED</u>	<u>BACKGROUND READING IN BREATHING ZONE</u>	<u>CALIBRATED AT</u>	<u>ON-SITE READING IN BREATHING ZONE</u>
1.	H _N w/10.2w Probe			
2.	RAD-Mini			
3.				
4.				
5.				

C. SITE NAME: _____ PROJECT NUMBER: _____
DATE: _____
WEATHER CONDITIONS: _____
NAMES OF ATTENDEES AT SITE: _____

D. COMMENTS ON MONITORING OR PROTECTIVE CLOTHING

SITE SAFETY OFFICER:

NAME _____

SIGNATURE

(P.D. Moss, 1/85)

ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM
ON-SITE SAFETY MEETING

Project BURNS COLO FORGE

Date _____ Time _____ Job No. F0110624

Address 9312 ARROW ROAD NW MINERVA, OH 44657

Specific Location _____

Type of Work _____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment _____

Chemical Hazards _____

Physical Hazards _____

Emergency Procedures _____

Hospital/Clinic _____ Phone _____

Special Equipment _____

Other _____

ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM
ON-SITE SAFETY MEETING

ATTENDEES

Name (Printed)

Signature

THOMAS A KOURIS

TIMOTHY MAYERS

JOSEPH D. CORNS

STEVEN ANDERSON

Meeting Conducted By:

TIMOTHY MAYERS

Site Safety Officer:

TIMOTHY MAYERS

Team Leader:

THOMAS A KOURIS

ECOLOGY & ENVIRONMENT, INC.
REGION 5
FIELD EQUIPMENT CHECKLIST

TEAM LEADER: Tom Kouris
PAN: FO140624
DATE OF DEPARTURE: 11/30/87
EXPECTED DATE OF RETURN: 12/4/87

A) Safety Instruments

____ Photovac TIP ID#
____ 1 HNU, (10.2) OR 11 LAMP ID#
____ OVA (organic vapor analyzer) ID#
____ Explosimeter/O2 meter ID#
____ Dräger pump, specify tube type (HCN,
____ Natural Gas, or other) ID#
____ 1 Rad-Mini ID#
____ Radiation, other: _____ ID#
____ Monitox (HCN) ID#
____ Heat stress monitor ID#
____ Noise equipment ID#
____ Dust monitor-MDA system ID#

B) First Aid Equipment (specify quantity)

____ 1 First aid kit
____ Oxygen inhalator
____ 4 Safety Glasses
____ Life vests
____ Ice vests
____ 1 Eye wash bottle

C) Respiratory Equipment (specify quantity)

____ Racal P.A.P.R. ID#
____ Robert Shaw escape mask ID#
____ MSA SCBA ID#
____ Extra air cylinders ID#

D) Respiratory Cartridges (specify quantity)

Box GMC-H
____ GM-P
____ HEPA (for racal)
____ Other: _____

E) Protective Clothing

1. Suits (specify quantity)

____ Splash aprons
____ Saranex, Size: M, L, XL
____ 8 Tyvek, Size: M, L, XL, XXL
____ Butyl acid suits
____ Fully encapsulated suits
____ Other: _____

2. Gloves (specify quantity)

Box Latex disposable, Size: M, L, XL
Sp Butyl Rubber, Size: M, L, XL
____ Nitrile, Size: M, L
____ Neoprene, Size: M, L
____ Viton, Size: M, L
____ Glove liners, Size: M, L

3. Boots (specify quantity)

____ Neoprene, Size: _____
602 Latex disposable, Size: L, XL
____ Other: _____, Size: _____

A) Vehicles

____ Suburban ID#
____ Cargo Van ID#
____ Step Van ID#

B) Sample Bottles (specify quantity)

____ 80 oz. amber glass
____ 1 lt. amber glass
____ 40 ml. vial
____ 1 lt. plastic
____ 15 8 oz. glass
____ 15 120 ml. glass
____ Dioxin Sample Kit

C) Preservatives (specify quantity)

____ HNO3
____ NaOH
____ Other: _____

D) Decon Supplies (specify quantity)

____ Wash tubs
____ 2 Buckets
____ 2 Scrub brushes
____ Solvent
____ 1 Detergent (Alconox)
____ 1 MSA Sanitizing solution

E) Field Equipment (specify quantity)

____ Conductivity meter ID#
____ PH meter ID#
____ Thermometer ID#
____ Masterflex pump and filter apparatus ID#
____ 1 Camera ID# 110 Instamatic
____ Compass ID#
____ Water-level indicator ID#
____ Split-spoon samplers ID#
____ Bailers ID#
____ Magnetometer ID#
____ Resistivity meter ID#
____ Robair pump system ID#
____ PVC hand pump ID#
____ Well point sampler ID#
____ Air sampling pump kits ID#
____ Buck calibrator ID#
____ Meteorological station ID#
____ Metal detector ID#
____ Level/tripod and rod ID#
____ Pitcher pump ID#
____ Photovac ID#
____ Thermal desorber ID#
____ Other: _____ ID#

1 power auger
1 bucket auger
1 shovel
1 pick
2 Ig Cooler
2 Vermiculite
3 Trowels
1- gas can

ECOLOGY AND ENVIRONMENT, INC.

FIELD INVESTIGATION TEAM

SITE INSPECTION PLAN

A. GENERAL INFORMATION

SITE: BURNS COLD FORGE CO. (Masco Industries) ID NO.: F05-8706-231
LOCATION: 9312 Arrow Rd., NW U.S. EPA NO.: OH0004213047
Minerva, OH 44657 SSID NO.: _____
(Carroll and Stark Counties) WSTS NO.: 0H0624
PLAN PREPARED BY: Tom Sullivan DATE: 7/30/87
APPROVED BY: _____ DATE: _____
OBJECTIVE (including description of work to be performed): Define waste
characteristics and quantities through interviewing site
representatives, taking 5 soil samples, and inspecting site.
DESIRED REPORT FORM: SI REPORT (2070-13) ✓ HRS REPORT ✓
OTHER (EXPLAIN) _____
PROPOSED DATE OF INVESTIGATION: To be determined.
BACKGROUND REVIEW: Complete: _____ Preliminary: ✓
HRS PRELIMINARY SCORE OF ROUTES: GW 0 SW 0 AIR 0

Not responsive

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid ✓ Solid _____ Sludge ✓ Gas _____
CHARACTERISTIC(S): Corrosive ✓ Ignitable _____ Radioactive _____ Volatile _____
Toxic ✓ Reactive _____ Unknown ✓ Other (Name) Persistent

LEVEL OF PROTECTION: A B C ✓

FACILITY DESCRIPTION: Burns Cold Forge manufactures shafts, pinions, and spindles for wheels from round steel bars.

Principal Disposal Method (type and location): Waste oils and allegedly waste acids were stored in pits on-site.

Unusual Features (dike integrity, power lines, terrain, etc.): Outfall and

discharge to Still Fork.

Status: (active, inactive, unknown) Facility is active but pits are inactive and have been closed. Closure

method is unknown.

History: (worker or non-worker injury; complaints from public; previous agency action): On-site processes generate RCRA hazardous wastes

(caustic cleaner, zinc phosphate wastes) which are regulated and monitored by RCRA programs. Site is NPDES permitted for discharge into Still Fork.

Prior to RCRA, waste oils were stored in pits outside

facility (1975-78). An 8000g tank is now used. Allegations exist that state waste acids were co-disposed of with oil in the pits.

Following closure of pits saturated soils were removed to a

landfill, no soil samples were taken. If waste acids were disposed in pits there may be heavy metal contamination.

C. HAZARD EVALUATION

(Use Hazard Evaluation of Chemicals sheets for specific or representative chemicals

present.):

Heavy metals (lead, chromium)

Spent acids in soil.

Waste oils (cutting fluids, hydraulic oils) also in soil.

MODIFICATIONS: None anticipated at this time.

SITE SAFETY PLAN ON FILE AT E & E: YES ☒ NO ☐

D. FIELD WORK REQUIRED

PERIMETER ESTABLISHMENT: MAP/SKETCH ATTACHED? YES ☒ NO ☐

Perimeter Identified? YES ☐ NO ☒

Zone(s) of Contamination Identified? YES ☐ NO ☒

Geophysical Work: YES ☐ NO ☒

Type: Magnetometry ☐ Seismic Refraction ☐ GPR ☐ Resistivity ☐ Other ☐

Comments: _____

Drilling: YES ☐ NO ☒

Well Location Identified: YES ☐ NO ☐

Drill Plan/Well Installation Plan Attached: YES ☐ NO ☐

Sampling Required: YES ☒ NO ☐

Type: GW ☐ SW ☐ Air ☐ Soil ☒ Waste ☐ Other ☐

Sampling Locations Identified: YES ☐ NO ☒

SUMMARY OF SAMPLING PROCEDURES: (Special Equipment, Facilities, or Procedures)

Soil samples from area where pits were will be collected to help define waste characteristics. Approximately 5 soil samples will be taken. If pits are completely covered soil samples should be taken at depth using split spoon or other sampling device. Standard soil sampling procedures will be followed.

E. ANALYTICAL SERVICES REQUIRED

RAS ☒

SAS ☐

CRL ☐

F. QAPP

REQUIRED: YES ☐ NO ☒

IF NO, EXPLAIN: No SAS or air samples.

G. SI WORK TEAM SIZE/LIMITATION

TEAM MEMBER

DISCIPLINE

RESPONSIBILITY

To be determined prior to site inspection.

WORK LIMITATIONS (Time of day, etc.): Work will be conducted during daylight hours only. Buddy system will be employed, team members will be monitored for exposure.

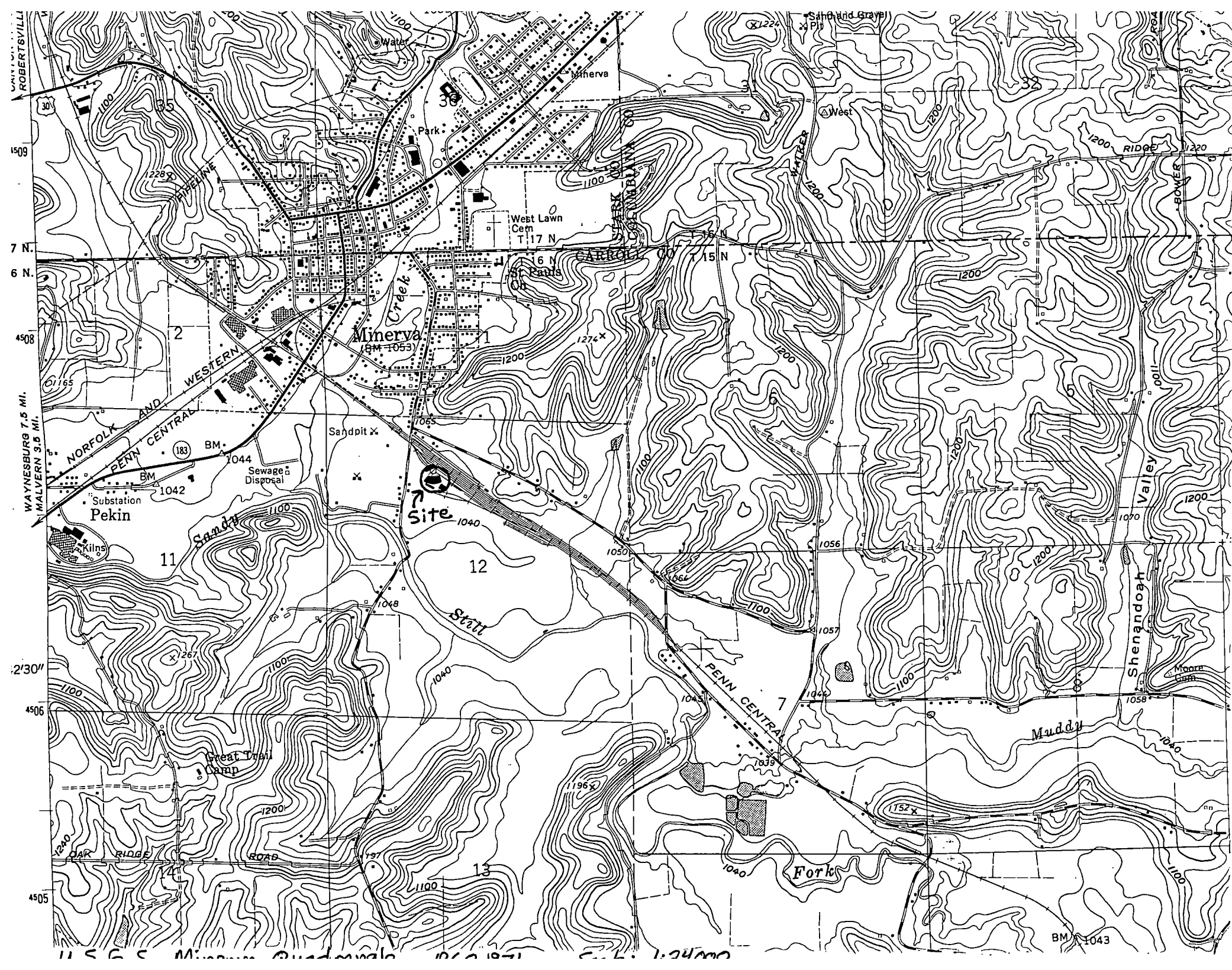
COMMENTS: If heavy metal contamination is present in soils, the

Not responsive

Surface water/sediment sampling of Still Fork is unnecessary because there is NPOES permitted discharge and an observed release to surface water would not significantly alter the score. In addition, pits were closed almost 10 years ago so contaminants may have flushed from river system had they reached Still Fork from the pits.

Groundwater sampling would not be technically feasible at

Not responsive



ECOLOGY AND ENVIRONMENT, INC.

FIELD INVESTIGATION TEAM

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OTHER (EXPLAIN)
PROPOSED DATE OF INVESTIGATION: To be determined.
BACKGROUND REVIEW: Complete: Preliminary: ✓
HRS PRELIMINARY SCORE OF ROUTES: GW 0 SW 0 AIR 0
(NO FIELD WORK)

Not responsive

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CHARACTERISTIC(S): Corrosive ✓ Ignitable _____ Radioactive _____ Volatile _____
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(Use Hazard Evaluation of Chemicals sheets for specific or representative chemicals present.):

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Spent acids in soil.

Waste oils (cutting fluids, hydraulic oils) also in soil.

LEVEL OF PROTECTION: A ☐ B ☐ C ☐ D ☒

MODIFICATIONS: None anticipated at this time.

SITE SAFETY PLAN ON FILE AT E & E: YES ☒ NO ☐

D. FIELD WORK REQUIRED

PERIMETER ESTABLISHMENT: MAP/SKETCH ATTACHED? YES ☒ NO ☐

Perimeter Identified? YES ☐ NO ☒

Zone(s) of Contamination Identified? YES ☐ NO ☒

Geophysical Work: YES ☐ NO ☒

Type: Magnetometry ☐ Seismic Refraction ☐ GPR ☐ Resistivity ☐ Other ☐

Comments: _____

Drilling: YES ☐ NO ☒

Well Location Identified: YES ☐ NO ☐

Drill Plan/Well Installation Plan Attached: YES ☐ NO ☐

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Type: GW ☐ SW ☐ Air ☐ Soil ☒ Waste ☐ Other ☐

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TEAM MEMBER

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